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Please find below and/or attached an Office communication concerning this application or proceeding.

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

Application Number: 10/736,921

Filing Date: December 16, 2003

Appellant(s): WEI ET AL.

MAILED  
DEC 20 2007  
GROUP 1700

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Matthew Koziarz  
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 12 October 2007 appealing from the final Office action mailed 14 May 2007 and the pre-brief appeal conference decision of 30 August 2007.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal: the under appeal of commonly owned co-pending application No. 10/736,922 as stated by the Appellant.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows: the rejections of claims 1-21, 28-30, 34, 36 and 37 under the first paragraph of 35 USC 112 as failing to comply with the enablement requirements (stated by Appellants as first and second grounds) are not presented for review on appeal because they have been withdrawn by the examiner in this examiner's answer.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

6,368,668	KOBAYASHI et al.	4-2002
2003/0021720	REISFELD et al.	1-2003

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

I. Claims 1-21, 28-30, 34, 36 and 37 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The above claims now add the limitations that the first layer is operative to react with a target substance to

produce a first intermediate substance, the second layer is operative to react with the first intermediate substance to form a second intermediate substance, and the third layer is operative to react with the second intermediate substance. The added limitations raise an issue of new matter(s) since there is no support for the added limitations in the specification as originally filed, especially to the latter reaction between the third layer with the second intermediate substance.

II. Claims 22 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (US 6,368,668 B1) in view of Reisfeld (US 2003/0021720 A1). Kobayashi's invention is directed to a method and apparatus for producing a photocatalytic material. Kobayashi discloses in the section "Background Of The Invention" that "photocatalysts have been drawn attention as materials that, upon light irradiation, cause adsorption of oxygen molecules on bacteria, mold, and organic compounds, such as offensive odor components, or desorption of oxygen molecules therefrom and accelerate the decomposition (oxidation) of the organic compounds" and is useful for purification of harmful gases (emphasis added). Kobayashi discloses the photocatalytic material being formed by coating a photocatalyst composition of a photocatalyst metal oxide on a substrate (col. 3, lines 28-67). Kobayashi also discloses in paragraph crossing cols. 5 and 6 that the photocatalyst coating composition may further comprise a metal and/or a metal oxide to improve its photocatalytic activity, wherein the metal and/or metal oxide includes silver, platinum, gold and manganese oxide and is supported on the surface of the

photocatalyst metal oxide; and in col. 10, lines 17-30 that a multi-layered coating of the photocatalyst coating composition may be formed on the substrate and the multi-layered coating may be formed from a plurality of different photocatalyst coating composition. As such, Kobayashi discloses a multi-layered coating of the photocatalyst coating composition from a plurality of different photocatalyst coating compositions formed on a substrate wherein the different photocatalyst coating compositions include all the recited coatings of a photocatalytic coating (titanium oxide or metal compound loaded titanium oxide), a photocatalytic metal loaded metal compound coating, and a coating of gold on titanium oxide, and the use of the photocatalytic material in the purification of gases for the eliminating of odors, volatile organic compounds, bacteria and mold.

The difference between Kobayashi and the above claims is the use of the photocatalyst material in a fluid purification system with the recited container, device and UV light source. Reisfeld teaches in a photocatalytic fluid purification system the recited limitations of a photocatalytic purifier having at least one catalytic coated substrate with which the circulated air comes into contact and at least one UV light source disposed near the substrate for illuminating thereof for eliminating odors, volatile organic compounds and bioaerosols in the circulated air (Figs. 1 and 4 and paragraph 20). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified Kobayashi's teachings as shown by Reisfeld because this would result in the application of Kobayashi's photocatalytic material to a

photocatalytic fluid purification system for the eliminating of odors, volatile organic compounds and bioaerosols in the air.

As to the subject matter of claim 31, Reisfeld teaches it in paragraph 22. The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the photocatalytic material of Kobayashi such that the substrate is a honeycomb to be coated with the photocatalytic material, as per the teachings of Reisfeld. One of ordinary skill in the art would have been motivated to make such modification because the selection of any of known equivalent substrates to be coated with the photocatalyst material for the photocatalytic fluid purification would be within the level of ordinary skill in the art.

III. Claims 24-27, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reisfeld '720 in view of Kobayashi '668. Reisfeld, a reference applied above, discloses in the photocatalytic fluid purification system the provision of three honeycomb photocatalytic filters (12,14,16) as shown in Fig. 1, each filter being coated with any suitable photocatalyst coating (paragraph 24). Kobayashi as applied above teaches a multi-layered coating formed on a substrate from a plurality of different photocatalyst coating compositions (col. 10, lines 17-30), wherein the photocatalyst coating composition may comprise a metal and/or a metal oxide to enhance the eliminating of odors, volatile organic compounds, bacteria and mold (paragraph crossing cols. 5 and 6). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the

time the invention was made to have modified Reisfeld's teachings as shown by Kobayashi because this would result in enhancing the photocatalytic fluid purification.

As to the subject matter of claim 27, the sequence of the recited ordered substrates, since there is no unexpected results from the recited ordered substrates and since it is disclosed in paragraphs 25, 35 and 42 of the specification that each of the substrates is used to adsorb each of specific contaminants and, when one specified contaminant is adsorbed on one of the substrates, each of the non-adsorbed contaminants is able to diffuse through the substrate and adsorbs on the next substrate, the combined references' substrates, Reisfeld's plurality of photocatalyst coated substrates with Kobayashi's substrate of a multi-layered coating from a plurality of different photocatalyst coating composition, though general and random is equivalent to the recited ordered substrates in the purification of the fluid for the adsorption of contaminants. Further, rearrangement of parts was held to have been obvious, *In re Japikse* 86 USPQ 70.

#### **(10) Response to Argument**

I. To the arguments under I and II of the appeal to the rejections of claims 1-21, 28-30, 34, 36 and 37 under 35 USC 112, first paragraph as failing to comply with the enablement requirement, the Examiner has withdraw the rejections under 35 USC 112, first paragraph in the present examiner's answer since the examiner is unable to establish the required undue experimentation.

II. Appellant argues under III that the claims do not include new matter because the specification includes at least one example (see paragraphs 32 and 37) illustrating that the intermediate layer oxidizes contaminants to produce carbon dioxide and that the inner layer (a third layer) oxidizes carbon dioxide. The Examiner believes the Appellant is erred in pointing the support in the above paragraphs because it is disclosed in paragraph 32 of the specification that the intermediate layer oxidizes contaminants to produce carbon dioxide (the recited second intermediate substance) and in paragraph 37 that the inner layer acted as a thermocatalyst oxidizes carbon monoxide to carbon dioxide (emphasis added). There is no support that the inner layer oxidizes carbon dioxide (the recited second intermediate substance) as Appellant now argues. Further, there is no support for the added limitations as asserted by the examiner, the added limitations being that the first layer is operative to react with a target substance to produce a first intermediate substance, the second layer is operative to react with the first intermediate substance to form a second intermediate substance, and the third layer is operative to react with the second intermediate substance

III. Appellant argues under IV that since the stated motivation by the examiner in the final Office action of 14 May 2007 is for modifying Reisfeld with Kobayashi's photocatalytic material and not for modifying Kobayashi with Reisfeld, the motivation does not establish *prima facie* obviousness. The Examiner finds this is unpersuasive. It's because the Office action of 29 November 2006 has been asserted as of record that,

since Kobayashi discloses a multi-layered coating from a plurality of different photocatalyst coating compositions formed on a substrate wherein the different photocatalyst coating compositions include all the recited coatings of a photocatalytic coating (titanium oxide or metal compound loaded titanium oxide), a photocatalytic metal loaded metal compound coating, and a coating of gold on titanium oxide, and the use of the photocatalytic material in the purification of gases and since Reisfeld teaches in a photocatalytic fluid purification system the recited provision, the motivation for modifying Kobayashi with Reisfeld "would result in the application of Kobayashi's photocatalytic metal to a photocatalytic fluid purification system (photocatalytic air purifier)".

IV. Appellant argues under V that the rejection of claims 24-27, 32 and 33 under 35 USC 103(a) over Reisfeld in view of Kobayashi does not establish obviousness because the given motivation is merely a solution that the Examiner hopes to achieve by making the proposed combination rather than a reason that would prompt one of ordinary skill to provide the particular claimed arrangement". The motivation of combining Reisfeld with Kobayashi "this would result in enhancing the photocatalytic fluid purification" is not merely a solution as argued by Appellant but from the combination of teachings from Reisfeld in paragraph 22 that "[e]ach additional filter layer 12 increases the efficiency of the filter 10" with that of Kobayashi in paragraph crossing cols. 5 and 6 that "[t]he addition of the metal or the metal oxide results in the formation of a film which can kill

bacteria and mold deposited on the surface thereof even in a dark place"; and "can enhance redox activity of the photocatalyst and consequently can improve the decomposition of organic stains or soils and the decomposition of harmful gases or offensive odors" and in paragraph 3 of col. 10 that "a plurality of different catalyst coating compositions may be provided followed by successive coating of the plurality of different photocatalyst coating compositions onto the surface of the substrate".

Further to the argument to the rejection of claim 27 that the rejection does not establish any motivation for choosing the particular claimed arrangement as "[m]ere arrangement without motivation for the particular claimed arrangement of layers is not sufficient to establish obviousness (MPEP 2144.04(VI)(C)". The Examiner finds this is also unpersuasive. Since Reisfeld discloses that each additional filter layer increases the efficiency of the filter and since Kobayashi teaches a multi-layered coating formed on a substrate from a plurality of different photocatalyst coating compositions, the photocatalyst composition with the addition of metal and/or metal oxide to enhance the eliminating of odors, volatile organic compounds, bacteria and mold, the motivation in the combined references is clearly the enhancing of the photocatalytic fluid purification by employing a plurality of photocatalytic coated substrate with different photocatalyst coating composition. Further, as asserted by the examiner to the sequence of the recited ordered substrates, since there is no unexpected results from the recited ordered substrates and since it is disclosed in the specification that each of the substrates is used

to adsorb each of specific contaminants and, when one specified contaminant is adsorbed on one of the substrates, each of the non-adsorbed contaminants is able to diffuse through the substrate and adsorbs on the next substrate, the combined references' substrates, Reisfeld's plurality of photocatalyst coated substrates with Kobayashi's substrate of a multi-layered coating from a plurality of different photocatalyst coating composition, though general and random is equivalent to the recited ordered substrates in the purification of the fluid for the adsorption of contaminants.

To the further argument to the rejection of claim 27 based on improper grounds as Appellant "is not required to provide unexpected results in absence of prima facie obviousness" and that there is no motivation to modify the base reference to meet the limitations of the claim. The rejection is maintained because of no unexpected results provided by Appellant and because the order of the combined references' substrates is equivalent in function to the claimed order of the substrates as asserted by the Examiner.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Kishor Mayekar



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Art Unit: 1795

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